UNIVERSITY OF CENTRAL PUNJAB

Project Document Phase 1

Project Title:

Quiz Application: Mind Sprint

Course Title:

Human Computer Interaction

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Contents

Abstract 2
1. Introduction 2
1.1 Idea Generation: 3
1.1.1 Ideas/Problems: 3
1.1.2 Brainstorming Activity: 7
1.1.3 Selected Idea: 8
1.1.4 Reasons Behind Choosing This Idea: 8
1.2 Problem Statement: 9
1.3 Objectives: 9
1.4 Motivation: 9
2. Target market Identification 10
2.1 Target Market: 10
2.2 User Classes and Characteristics: 10
2.3 Primary and Secondary User Classes: 10
3. Exploratory Study 11
3.1 Analysis: 11
3.2 Requirements: 11
3.2.1 Functional Requirements: 11
3.2.2 Nonfunctional Requirements: 11
3.3 Usability Goals: 11
4. Need Finding (Interviews) 12
4.1 Goals of Interview: 12
4.2 Process of interview: 12
4.3 User Photos and Captions: 13
4.4 User Needs: 14
4.5 Class profiles: 14
4.6 Persona: 16
4.7 Scenarios: 17

Abstract

The Quiz web-based application is an e-learning platform designed to provide a comprehensive tool for knowledge assessment and enhancement. This application enables users to manage their account, select their department, choose quiz subjects, and set the difficulty level of their quizzes. It serves a wide range of audience such as students, teachers, exam-takers, interviewees, and anyone involved in the educational field. The application has a user-friendly interface making it easier to use for users of all ages.

A standout feature of this application is its real-time scoring system and immediate feedback which provides areas for improvement and offers explanations for both correct and incorrect answers to quiz-takers, aiding in concept building and understanding. The application enables user to take quizzes of various subjects, allowing users to enhance their learning experience to their specific educational needs. Additionally, users can choose difficulty levels such as easy, intermediate, and hard, enabling them to progressively master their chosen subjects.

The responsive design of the application makes it usable on a wide range of devices, such as desktops, tablets, and smartphones, providing flexibility and convenience for users to take quizzes anytime and anywhere. By offering a secure and enjoyable learning experience, this web-based quiz application aims to enhance educational outcomes and support continuous learning across different fields.

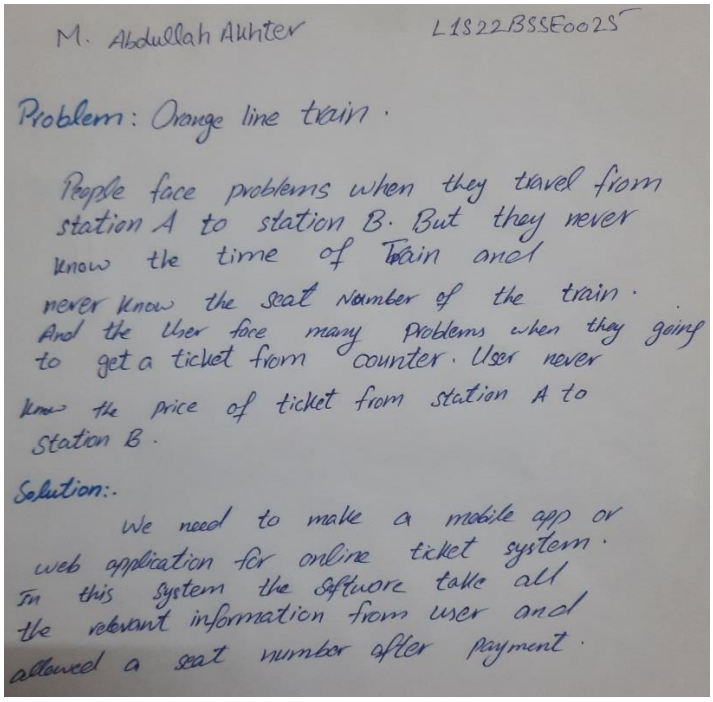
1. Introduction

The Quiz web-based application is a user-friendly e-learning platform that serves students, teachers, exam-takers, and professionals in educational fields. It allows users to manage their accounts, select their departments, their subjects, and their difficulty levels for quizzes. With its user-friendly interface and real-time scoring system, the application has a goal to facilitate effective learning and concept building. It offers accessibility on any device, supports flexibility and convenience for users to engage in quizzes anytime, anywhere.

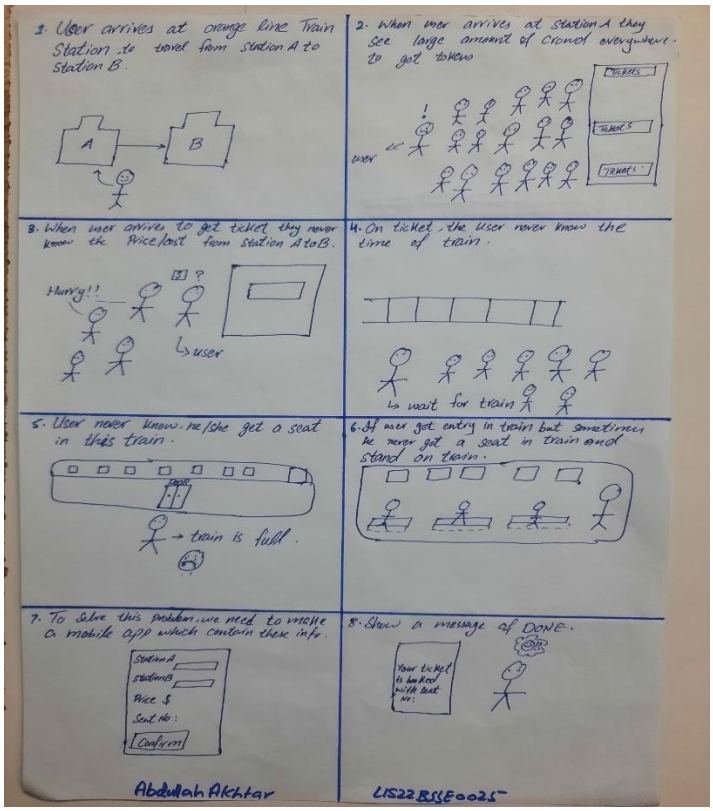
1.1 Idea Generation:

1.1.1 Ideas/Problems:

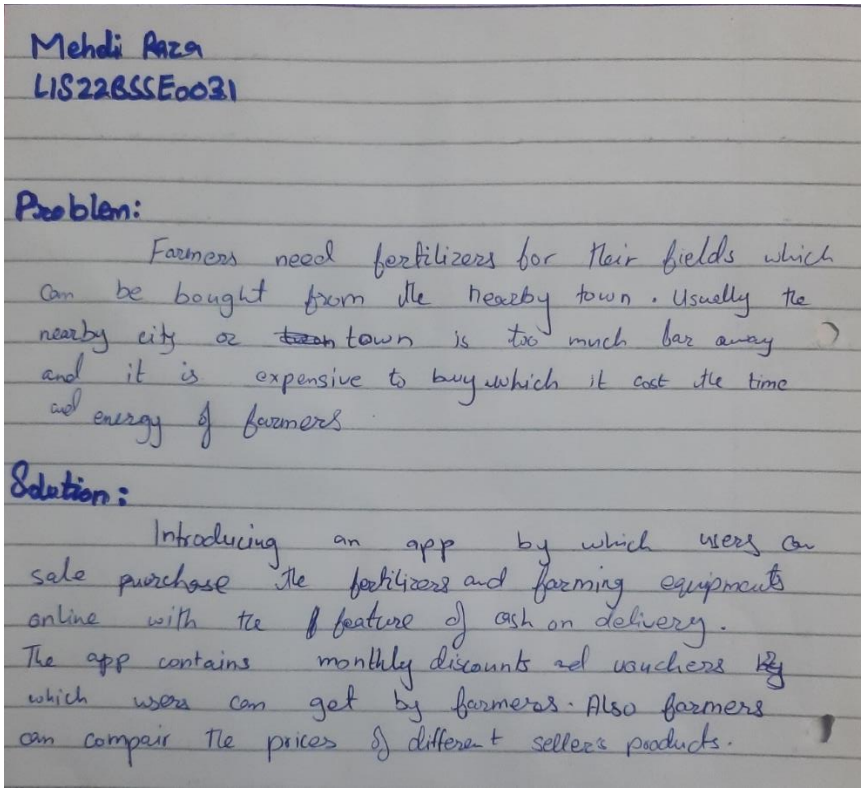
Idea 1: Online Ticketing App



Storyboard



Idea 2: Fertilizers Buying & Selling App



Mehdi Raza
L1S22BSSE0031

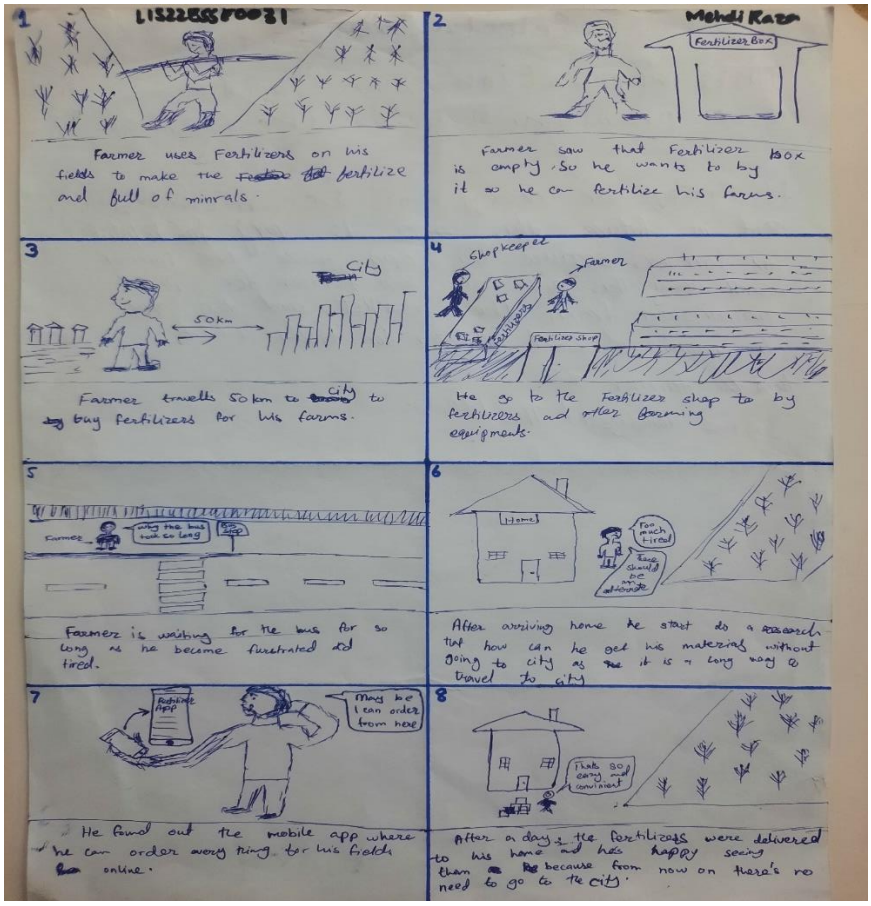
Problem:

Farmers need fertilizers for their fields which can be bought from the nearby town. Usually the nearby city or ~~town~~ town is too much far away and it is expensive to buy which it cost the time and energy of farmers.

Solution:

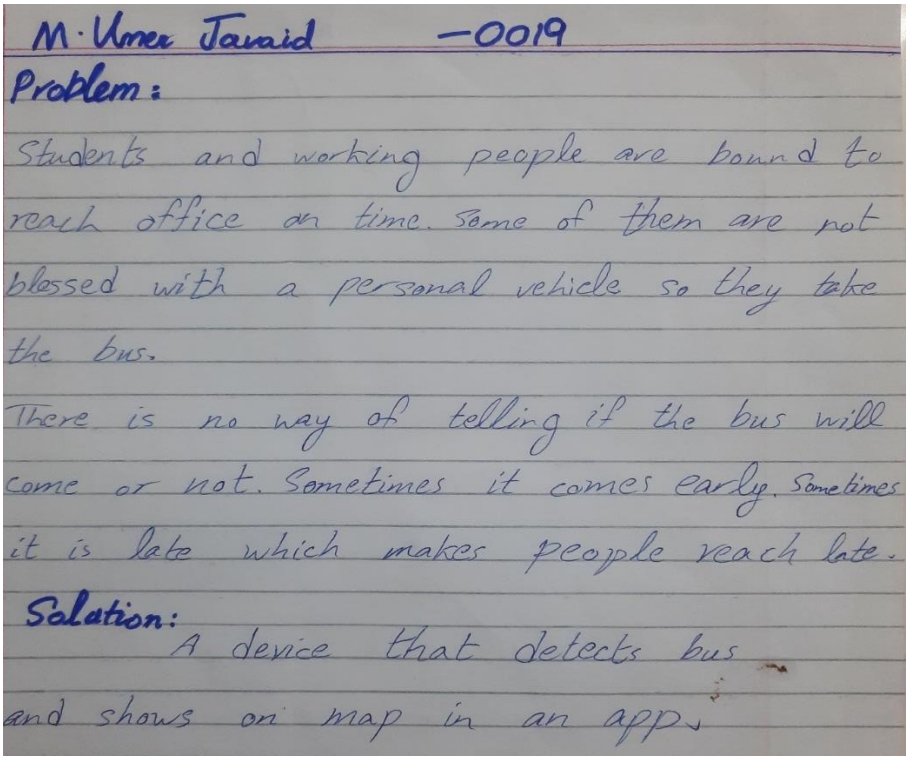
Introducing an app by which users can sale purchase the fertilizers and farming equipments online with the feature of cash on delivery. The app contains monthly discounts and vouchers by which users can get by farmers. Also farmers can compair the prices of different sellers products.

Storyboard



1. Farmer uses Fertilizers on his fields to make the ~~Faster~~ ~~Soil~~ fertilize and full of minrals.
2. Farmer saw that Fertilizer box is empty. So he wants to by it so he can fertilize his farms.
3. Farmer travells 50km to ~~buy~~ city to buy fertilizers for his farms.
4. He go to the Fertilizer shop to by fertilizers and other farming equipments.
5. Farmer is waiting for the bus for so long as he became ~~frustrated~~ and tired.
6. After arriving home he start do a ~~research~~ that how can he get his materials without going to city as ~~the~~ it is a long way to travel to city.
7. He found out the mobile app where he can order every thing for his fields ~~on~~ online.
8. After a day the fertilizers were delivered to his home and he was happy seeing them ~~he~~ because from now on there's no need to go to the city.

Idea 3: Online Voting System



M. Umer Javaid -0019

Problem:

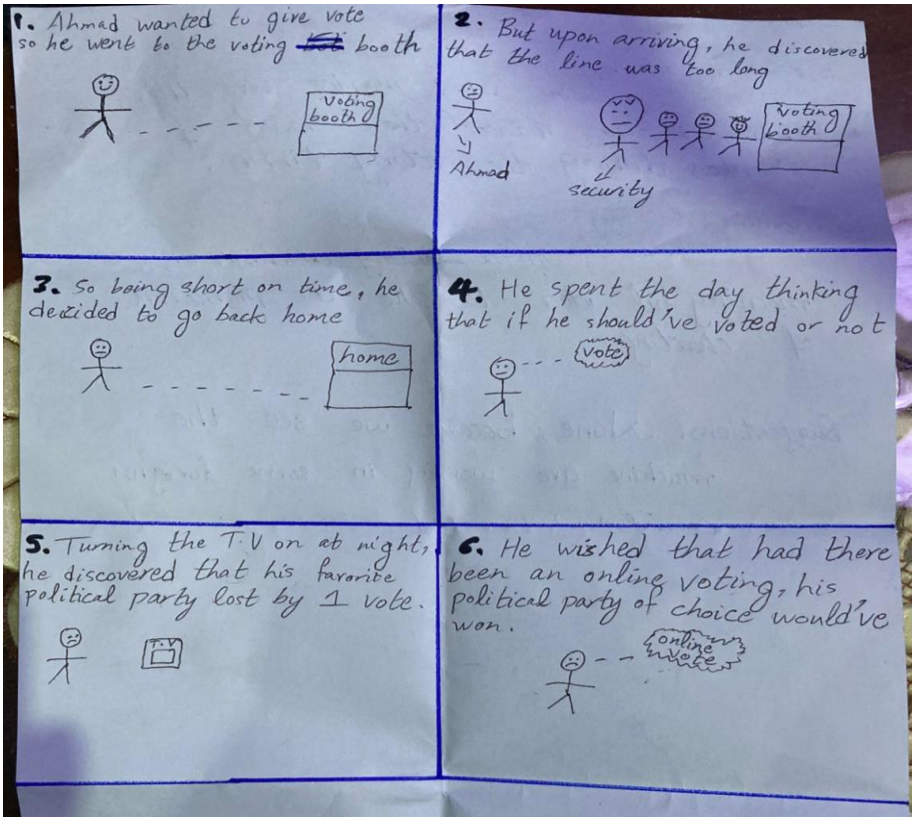
Students and working people are bound to reach office on time. Some of them are not blessed with a personal vehicle so they take the bus.

There is no way of telling if the bus will come or not. Sometimes it comes early. Sometimes it is late which makes people reach late.

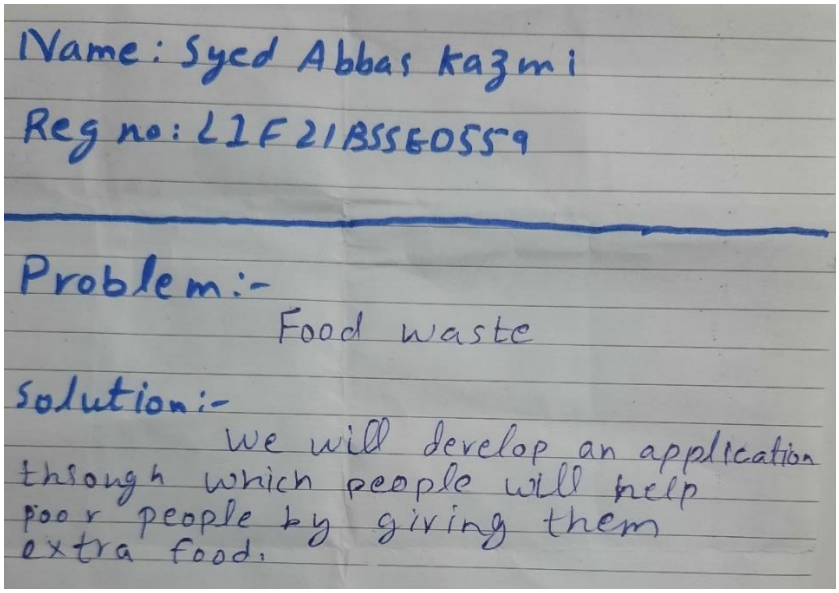
Solution:

A device that detects bus and shows on map in an app.

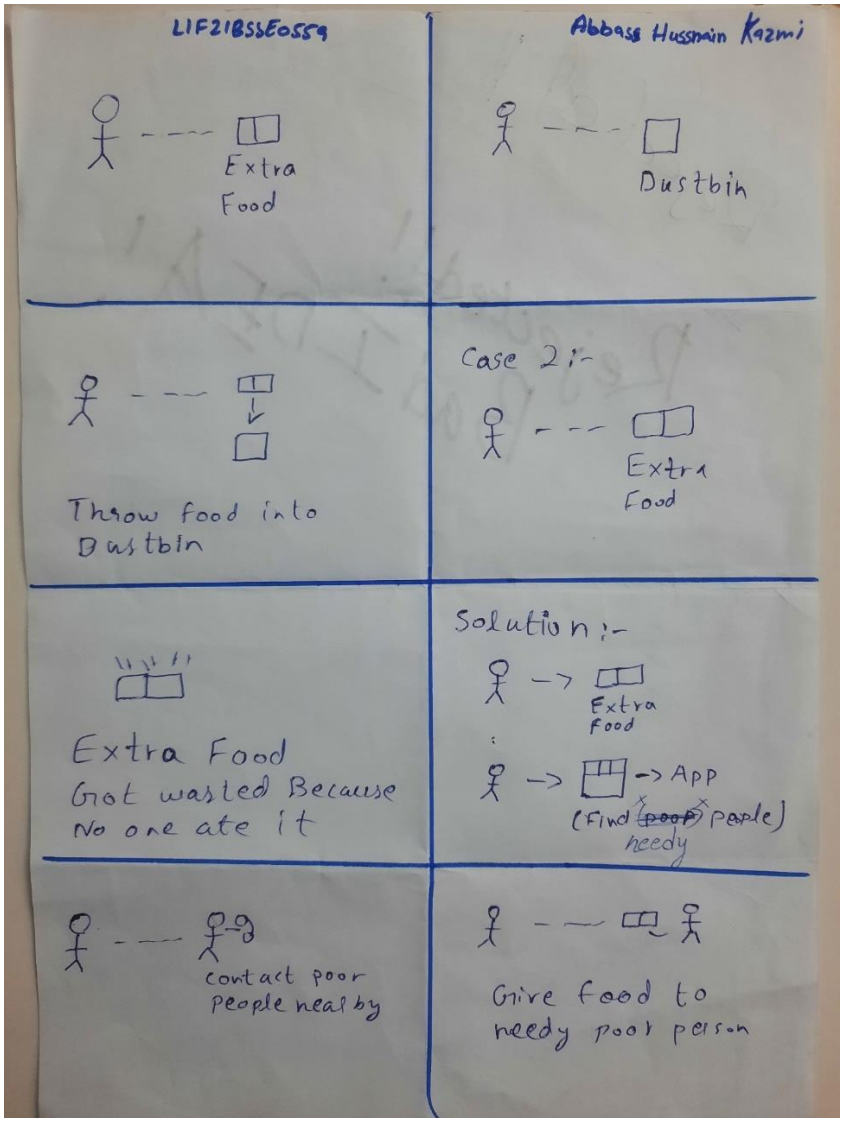
Storyboard



Idea 4: Extra Food save app



Storyboard



1.1.2 Brainstorming Activity:

Step 1: Idea Generation

- **Activity**: Each team member independently generates an idea.
- **Objective**: To identify a mobile application or website concept that addresses the needs of a large group.
- **Outcome**: A collection of diverse and innovative ideas.

Step 2: Storyboarding

- **Activity**: Each team member creates his/her idea’s storyboard.
- **Objective**: To visually view the generated idea.
- **Outcome**: Detailed visual narratives that defines the functionality and user experience of each idea.

Step 3: Presentation

- **Activity**: Each team member presents his/her idea to the group.
- **Objective**: To explain the concept and potential impact of the idea.
- **Outcome**: A clear understanding of each idea's unique value proposition and game-changing potential.

Step 4: Discussion

- **Activity**: Group discussion on the pros and cons of each member’s idea.
- **Objective**: To critically evaluate each idea without bias.
- **Outcome**: An informed analysis of the strengths and weaknesses of each concept.

Step 5: Finalization

- **Activity**: Select the best idea through consensus.
- **Objective**: To choose an idea that meets the group's requirements and satisfies all members.
- **Outcome**: A finalized concept that is agreed upon by the entire team and ready for further development.

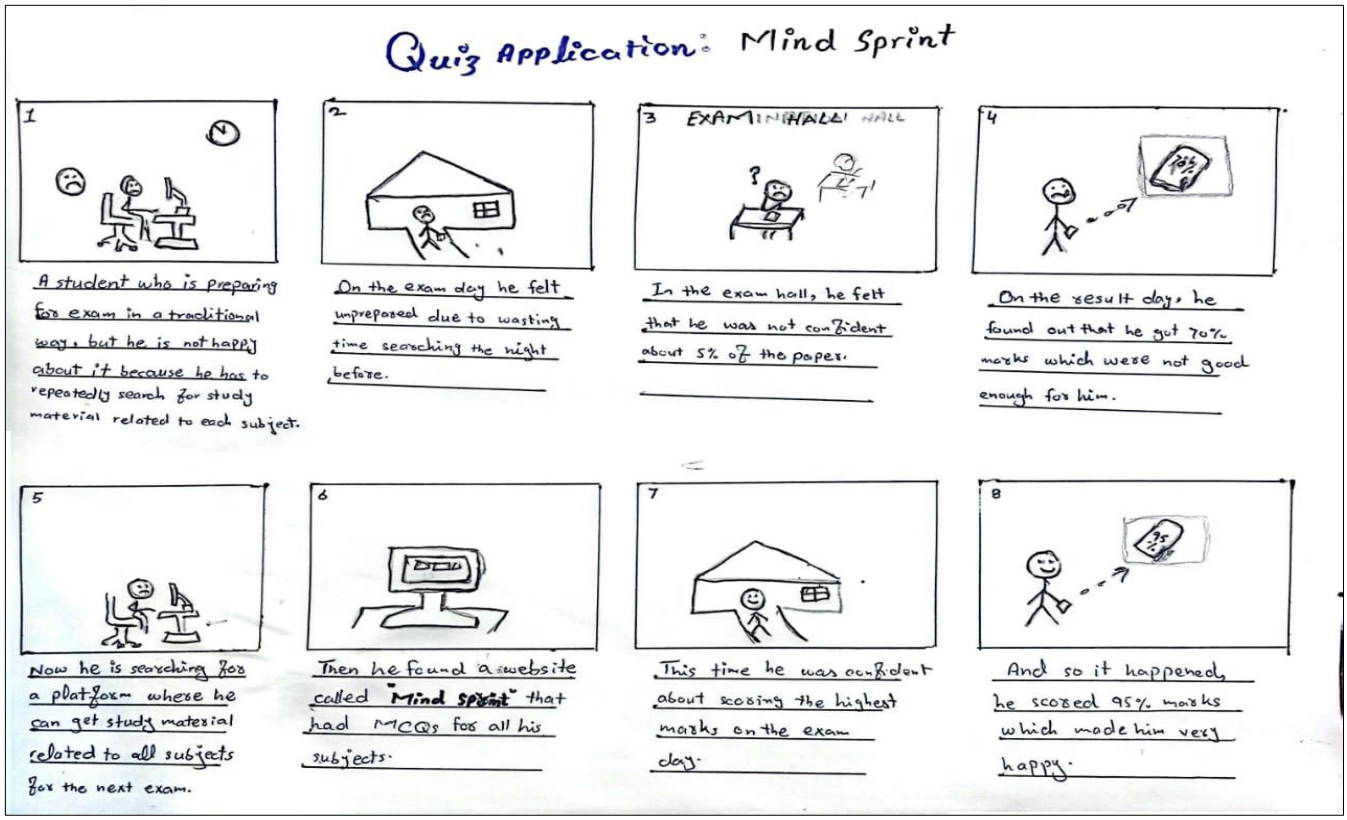
Step 6: Target Market Identification

- **Activity**: Group discussion to define the target market.
- **Objective**: To identify the specific group of people who will benefit most from the mobile application or website.
- **Outcome**: A clear definition of the target market, including demographics, behaviors, needs, and preferences.

Step 7: User Classes Definition

- **Activity**: Group discussion to classify different types of users.
- **Objective**: To categorize potential users into distinct classes based on their characteristics and usage patterns.
- **Outcome**: Detailed user classes that highlight the primary, secondary, and tertiary users, along with their specific requirements and expectations.

1.1.3 Selected Idea:



1.1.4 Reasons Behind Choosing This Idea:

1. Saves Time

- **Quick and Efficient**: This app saves users a lot of time by making tasks faster and easier.
- **Convenient**: Users can get things done quickly, which makes their lives easier.

2. Large Market

- **Many Users**: In Pakistan, 60% of the population are students. This means a lot of people can use this app.

- **High Demand**: With so many potential users, the app has a big market to grow in.

3. Global Reach

- **International Use**: This app can be used by people all over the world, not just in Pakistan.
- **Growth Opportunities**: Being accessible globally means the app can expand and become well-known internationally.
- **Credibility**: A globally recognized app is more trusted and respected.

4. Versatile and Useful

- **Many Features**: The app has several useful features, including:
    - **Choosing Fields**: Users can pick their area of interest.
    - **Selecting Subjects**: Users can choose subjects that are important to them.
    - **Quiz Levels**: Users can select the difficulty level of quizzes to match their skills.
- **User-Friendly**: These features make the app useful for many different needs.
- **Improves Learning**: The app helps users learn better by providing personalized tools.

1.2 Problem Statement:

Many students struggle with exam preparation due to limited time and lack of quality assessment tools, leading to poor performance. To address this, a web-based quiz application is proposed, offering real-time scoring, immediate feedback, and detailed explanations. This platform will support efficient learning and concept building by providing personalized quizzes on various subjects with adjustable difficulty levels. It is designed for use by students, teachers, exam-takers, job seekers, and professionals anytime and anywhere, making it globally accessible on desktops, tablets, and smartphones.

1.3 Objectives:

- Expand to other educational levels like school, college etc.
- Enhance security measures.
- Gather user feedback for improvements.
- Optimize performance.
- Add Customizable Quizzes.
- Localize for global reach.

1.4 Motivation:

Factors that motivated us to develop this application are:

- To make learning easy for everyone
- A platform that has all the subjects and their related quizzes
- A platform that serves all departments
- empower learners
- offer immediate feedback for improvement
- innovate in educational technology
- desire to make learning more accessible, engaging, and effective

2. Target market Identification

The system's users include students, teachers, exam-takers, job seekers, knowledge fans, professionals, and schools. They all have different learning needs and goals, but they're interested in using technology to help them learn and test their knowledge.

2.1 Target Market:

The target market for this application is diverse:

Age: Primarily targets undergraduate students (avg age 17-23 years).

Gender: This application is not gender biased.

Income: Relevant to undergraduate students regardless of income.

Location: It is available globally but at present, the target is local audience.

Behaviour: Users are curious and motivated to learn.

Lifestyle: It accommodates various lifestyles, including students, working professionals, and busy individuals.

Values: Users prioritize education, self-improvement, and convenience.

2.2 User Classes and Characteristics:

The user classes for this product are:

1. **Students:** Frequently engage with the product for learning and testing knowledge.
2. **Teachers:** Helping developer team in designing quizzes.
3. **Job-Seekers:** Use product when preparing for job related exams or interviews.
4. **Administrators:** Manage system settings, user accounts, and overall platform functionality.

2.3 Primary and Secondary User Classes:

Primary User	**Secondary Users**
Students	Teachers
Job-Seekers	Administration

3. Exploratory Study

3.1 Analysis:

. Kahoot!

- **Strengths:**
  - **Engaging Interface:** Gamified quizzes that are interactive and fun.
  - **Wide Usage:** Popular in educational settings, easy for teachers to implement.
  - **Instant Feedback:** Provides real-time results and rankings.
  - **Customizability:** Allows users to create custom quizzes.
- **Weaknesses:**
  - **Limited Depth:** More focused on engagement than deep learning.
  - **Basic Analytics:** Limited detailed performance analysis for users.
  - **Dependency on Live Participation:** Primarily used for live quizzes, not ideal for self-paced learning.

3.2 Requirements:

3.2.1 Functional Requirements:

1. Registration and login functionality
2. Allow users to select their department
3. Provide menu that include all subjects that are related to their dept.
4. Allow user to select difficulty level of their quizzes
5. Identify areas for improvement to users.
6. Provide guidance for how to this application.

3.2.2 Nonfunctional Requirements:

1. Security.
2. Efficiency.
3. Satisfaction
4. Learnability

3.3 Usability Goals:

1. **Learnability:**
   - How long it takes for user to perform any task.
   - Let new users use the app and measure their time and errors generated in completing a task.
2. **Memorability:**
   - How much an infrequent/returning user takes time to perform a task.

- Let users that have already used the app perform a task in app and measure their time and errors generated.

3. **Error prevention:**
   - The ability of the system to prevent the user to case error on the system.
   - Let users to use the app and record the number of errors that where caused and prevented.

4. **Efficiency:**
   - The ability of the system to allow experienced user to perform task faster.
   - Time an experience user performing a task.

Measuring Adherence to Usability Goals:

- Analysis of Task Performance: Average completion time.
- Survey Results.

4. Need Finding (Interviews)

4.1 Goals of Interview:

- Understanding user interaction.
- Identifying desired features.
- Enhancing enjoyment and usability.
- Gathering feedback on existing similar applications.
- Understanding context of use.

4.2 Process of interview:

Intro:

Hello or Assalam-u-Alikum! Thank you for taking the time to speak with me. My name is [name] and I am conducting a research to better understand the needs of users for quiz application we are developing. This interview should take about 5 minutes, and your insights will be invaluable in helping us to create a tool that meets your needs. Your responses will be kept confidential. Is it okay if I record this conversation for note-taking purposes? So, let's start our interview session:

What's your good name?

How was your day?

Tell me about, what are you studying currently?

Tell me more about your field?

According to you, is it valuable to adopt this field as a career?

Body:

Did you use any quiz application in the past?

How about your experience with that application?

If someone ask you, what type of new features you want to add in that application?

What can we do to make the application easier and more pleasant to use?

Do you have any specific accessibility needs or preferences (e.g., larger text, screen readers)?

How often do you use quiz application or when you use this type of application frequently?

What devices do you typically use for taking quizzes (e.g., smartphone, tablet, computer)?

Do you prefer short quizzes that can be completed quickly or longer, more comprehensive ones?

Closing:

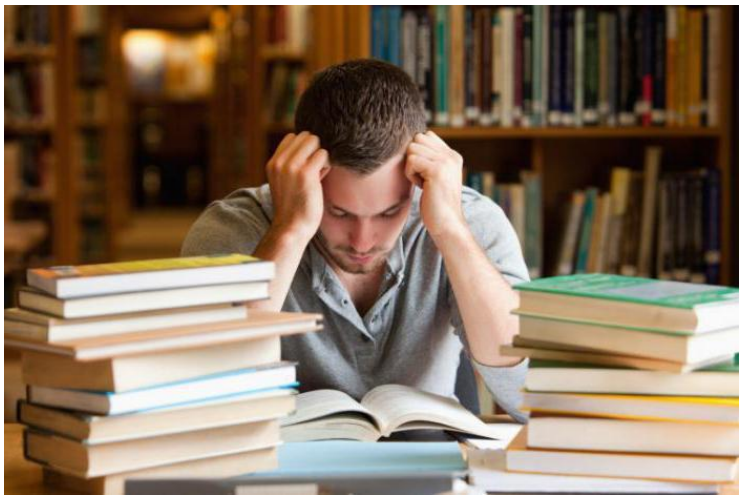
Do you have more thoughts or suggestion?

Thank you for your time and valuable insights! Your feedback will greatly help us in developing an effective and user-friendly quiz application.

4.3 User Photos and Captions:

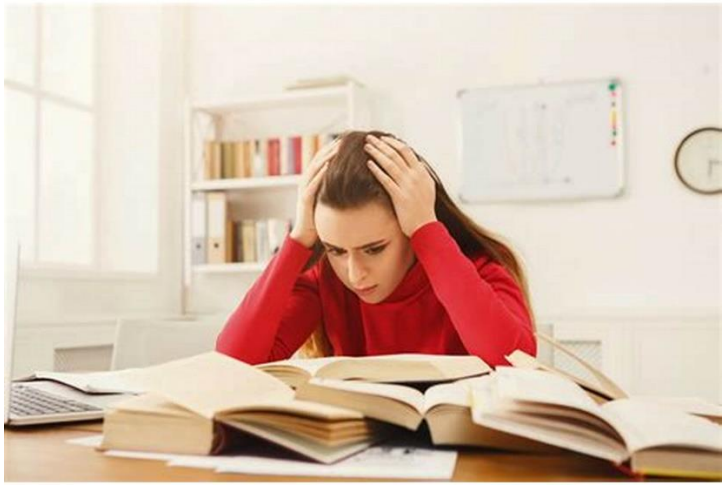
I chose to observe two people as they having difficulty in preparation of exams.

Photo 1:



Caption: Ahmed is battling with exam stress, he faces a daunting stack of books in the library as he is searching and reading thoroughly all books for finding the topics relevant to the syllabus of exams.

Photo 2:



Caption: Sarah is overwhelmed by exam preparation, she struggles to stay focused amid a pile of books because she didn't understand the topics. She wants to practice the problem solutions to get grip on the topics which she having difficulty in understanding them.

4.4 User Needs:

1. User responses are confidential and assure that they are comfortable with the process.
2. Engagement through personal and academic relevance, understanding their field and career value.
3. Features and usability improvements, including accessibility options.
4. Customization based on device usage and quiz length preferences.
5. Encouragement to share any additional thoughts or suggestions.
6. Suggestions for making the application easier and more pleasant to use.
7. Knowledge of prior quiz applications used helps understand user familiarity and expectations.
8. Users need to be able to suggest new features they find valuable.

4.5 Class profiles:

- **Student** (primary)

Age:	18-25 years (Avg.: 22)
Gender:	Male & female
Occupation:	Student
Location:	Lahore
Income:	$10,000/year
Technology:	Mobile and Computer
Disabilities:	No
Family:	Single

- **Job Seekers** (primary)

Age:	20-60 years (Avg.: 35)
Gender:	Male & female
Job Titles:	Data Entry Operator, Data Analyst, Director of Operations
Education:	High school diploma or equivalent
Work Experience:	2-7 years
Work Hours:	45 hours/week
Location:	Lahore
Income:	$20,000-60,000/year
Technology:	Mobile and Computer
Disabilities:	No
Family:	Single & Married

- **Teachers** (secondary)

Age:	25-60 years (Avg.: 35)
Gender:	Male & female
Job Title:	Teacher
Education:	Master's degree
Work Experience:	2-7 years
Work Hours:	40 hours/week
Location:	Lahore, Karachi, Islamabad
Income:	$25,000-60,000/year
Technology:	Mobile and Computer
Disabilities:	No
Family:	Single & Married

- **Administration** (secondary)

Age:	22-60 years (Avg.: 35)
Gender:	Male & female
Job Title:	Director of Administration, Facilities Manager, Secretary
Education:	High school diploma or equivalent - Master's degree
Work Experience:	2-7 years
Work Hours:	45 hours/week
Location:	Lahore
Income:	$35,000-80,000/year
Technology:	Mobile and Computer
Disabilities:	No
Family:	Single & Married

4.6 Persona:

PERSONA: Nazim Khan

NAME

Nazim Khan

TYPE

Rational

Background

Kyle Gray is a dedicated and ambitious college student pursuing a degree in Computer Science. He is currently in his junior year and has a keen interest in coding and technology. Besides his academic pursuits, Kyle enjoys playing basketball and actively participates in tech meetups and hackathons. He also works part-time to support his education. With a packed schedule, Kyle constantly seeks efficient and flexible ways to enhance his learning and academic performance. He relies on digital tools and platforms that offer convenience and adaptability to fit his busy lifestyle. The Quiz web-based application is one such tool that helps him manage his studies effectively, allowing him to customize his learning experience and stay on top of his coursework.

Demographic

♂ Male 22 years

Pakistan

Single

Undergraduate Student

Computer Science

Goals

As a college student, I aim to maximize my learning and academic performance through the Quiz web-based application. I value the ability to manage my account and customize my quiz experience by selecting my specific department, subjects, and difficulty levels. I seek a platform with a user-friendly interface and real-time scoring system that helps me quickly gauge my understanding of course material and track my progress. The application's accessibility on any device supports my busy lifestyle, allowing me to engage in quizzes and study anytime and anywhere, whether I'm at home, on campus, or commuting. This flexibility and convenience help me stay on top of my studies, reinforce key concepts, and prepare effectively for exams.

Needs

Selection of department, subjects, and difficulty levels to align with his course requirements and learning preferences.

An easy-to-use platform that saves time and allows for efficient navigation and interaction.

Instant results and feedback on quizzes to help him quickly understand his performance and areas needing improvement.

Ability to access the application from various devices (laptop, tablet, smartphone) to study from anywhere, whether at home, on campus, or while commuting.

Features that facilitate effective study sessions, such as timed quizzes, practice exams, and review of incorrect answers.

Skills

Computer Operator

0 25 50 75 100

English

0 25 50 75 100

Technology

4.7 Scenarios:

Problem: Balancing Study Time with a Busy Schedule

Scenario:

After a long day of classes, work, and basketball practice, I finally settle in at home around 9 PM, determined to study for my upcoming Data Structures midterm. Opening the Quiz web-based application on my laptop, I quickly customize a quiz focusing on the topics I need to review, setting the difficulty level to match the course material. The interface is straightforward, allowing me to start studying without any delays. As I answer each question, I receive instant scoring and feedback, which helps me pinpoint areas where I need to improve. Despite feeling tired, seeing my progress in real-time keeps me motivated. The next day, during my commute to campus, I continue my revision using the Quiz app on my smartphone, maximizing every spare moment to reinforce my understanding. This flexibility and accessibility are crucial for me to stay on top of my studies amidst a busy schedule, ensuring I am well-prepared for the midterm exam.